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SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for the

COLORADO RIVER DRAINAGE BASIN

May 1, 1940

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Issued by the  
United States Department of Agriculture  
Soil Conservation Service  
Division of Irrigation  
In Cooperation with  
The Colorado Agricultural Experiment Station  
Colorado State College  
Fort Collins, Colorado

May 6, 1940







SNOW SURVEYS AND IRRIGATION WATER FORECASTS  
for  
COLORADO RIVER BASIN  
May 1, 1940

The following data pertaining to snow surveys and irrigation water-supply forecasts are provided by the Division of Irrigation, Soil Conservation Service, U. S. Department of Agriculture, in cooperation with State departments, other federal bureaus and local organizations. The snow measurements are made principally by field personnel of the following Federal Government organizations: Forest Service, National Park Service, Geological Survey, Bureau of Reclamation, Indian Service; and the Utah Agricultural Experiment Station. This work is otherwise conducted cooperatively with the State Engineers of Utah and Colorado, State Planning Board of Wyoming, U. S. Geological Survey, Utah and Colorado Agricultural Experiment Stations, and various municipalities, irrigation associations, power companies, and others. Precipitation records are supplied by the U. S. Weather Bureau.

SUMMARY OF MAY 1 SNOW SURVEYS AND COMPARISON OF DATA WITH THAT OF PREVIOUS YEARS  
BY WATERSHEDS

WATERSHEDS	Snow Depth			Water Content			Number Courses Reporting 1940	Snow Density			1940 Water Content in percent of	
	Five Year Avg.*	1939	1940	Five Year Avg.*	1939	1940		Five Year Avg.*	1939	1940	Five Year Avg.*	1939
	In.	In.	In.	In.	In.	In.		Percent	Percent	Percent	Percent	Percent
COLORADO RIVER												
Green River	16.4	5.6	8.6	6.6	2.3	3.1	6	40	41	36	47	135
Colorado River**	28.5	25.9	24.1	10.7	10.3	7.8	19	38	40	32	73	76
Yampa River	37.8	30.2	34.5	16.5	13.9	16.5	5	44	46	48	100	119
White River	25.2	20.0	25.8	10.6	9.8	10.1	2	42	49	39	95	103
Gunnison River	17.7	11.3	14.6	7.0	4.4	5.3	12	40	39	36	76	121
Dolores River	11.6	8.9	10.9	4.3	3.7	4.0	3	37	42	37	93	108
San Juan River	26.0	21.3	13.7	12.0	9.8	5.7	4	46	46	42	48	58

\*Some for shorter periods  
\*\*Above Grand Junction, Colo.



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STRENGTHS

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# PRECIPITATION DATA (Based on incomplete returns)

WATERSHED	STATE	Precipitation October 1 to April 30	Departure from Normal	Precipitation	Departure from Normal
		Inches	Inches	April Inches	Inches
Colorado	Colorado	9.70	-0.61	2.15	+0.60
Green	Wyoming	5.99	+1.13	1.42	+0.64
San Juan	New Mexico	4.83	-1.04	0.55	-0.25
Gila	Arizona	6.53	-1.98	1.42	+0.59
Gila	New Mexico	6.25	+0.36	0.55	+0.09

## OUTLOOK

Precipitation over the watershed of the Colorado River and its tributaries in Colorado, Wyoming, New Mexico and Arizona during the month of April was above normal except in the San Juan Basin in New Mexico, but there is in general a deficiency in the accumulated precipitation since October 1, 1939 except on the Green River watershed.

Snow cover in the mountain areas in Colorado on the watershed of the Colorado River and its tributaries is greater than it was last year at this time except in the San Juan Basin. On the watershed of the Colorado above Grand Junction the average water content of the snow on the courses was 7.8 inches on May 1, and 10.3 inches on this date a year ago. The five-year average for May 1 is 10.7 inches. For the same periods the water content of the snow on the Green River courses was 3.1 inches, 2.3 inches and 6.6 inches; on the Yampa River courses was 16.5 inches, 13.9 inches and 16.5 inches; on the White River courses, the depths were 10.1 inches, 9.8 inches and 10.6 inches; on the Gunnison River courses they were 5.3 inches, 4.4 inches and 7.0 inches; and on the Dolores River courses they were 4.0 inches, 3.7 inches and 4.3 inches. On these same dates the depths on the San Juan River courses were 5.7 inches, 9.8 inches and 12.0 inches. No observations were made on the Gila River courses in Arizona and New Mexico on May 1 because the snow in this area disappears before this date.

The soil moisture condition is from fair to good except in the Casa Grande valley where it is very poor. Heavy pumping during 1939 in the Salt River Valley lowered the water table slightly. A more pronounced lowering of the water table occurred in the Casa Grande area amounting to approximately 4 feet. Further lowering in both areas is anticipated owing to the heavy draft which will occur this summer because of the shortage of water. Storage in the Salt River Valley Water Users Association reservoirs was 167,000 acre feet on May 1; last year it was 392,000 acre feet on this date. Coolidge Reservoir had 34,000 acre feet in storage on May 1, 1940 and 21,000 acre feet a year ago. In Taylor Park Reservoir there were 45,000 acre feet in storage on May 1, 1940 and 78,000 on May 1, 1939.



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The outlook for irrigation water in the Colorado River basin for the coming season improved somewhat during April. The water content of the snow on the courses on May 1 indicates that the runoff from the area, except the San Juan River Basin, will be about the same as last year and only slightly less than normal. Runoff from the San Juan Basin will probably be less than one half of what it was last year. If normal summer rains occur, there will be sufficient water for irrigation in the upper Colorado River Basin, but from present indications there will be a serious shortage of water in the San Juan and Gila river basins.







## COLORADO RIVER WATERSHED

Summary of Federal and State Cooperative Snow Surveys  
Issued May 6, 1940, at Fort Collins, Colo.

Main Drainage and Snow Course		Local Drainage	Location		Elev.	National Forest	May 1 Snow Course Measurements										
No.	Snow Course		State	Locality	Description			1939		1940		Avg.		1939		1940	
								In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
GUNNISON RIVER																	
18	Crested Butte	Slate River	Colo.	3mi. N. Crested B.	22-13S-86W	9000	Gunnison	9.1	1.1	1.3	3.5	0.3	0.4				
38	Sunshine Mt.	Henson Cr.	"	10mi. W. Lake City	35-44N-6W	10200	"	20.1	11.4	27.7	7.8	3.3	7.8				
42	Marshall Creek	Marshall Cr.	"	Marshall Pass	24-48N-6E	10800	Cochetopa	22.4	19.3	18.2	8.6	8.2	6.2				
43	Poncha Creek*	"	"	"	19-48N-7E	10500	"	14.6	16.7	13.4	5.5	6.8	4.6				
46	Park Cone	Taylor River	"	Taylor Park Res.	19-14S-82W	9700	Gunnison	8.1	1.2	0.5	2.9	0.4	0.1				
53	Alexander Lake	Kiser Creek	"	10mi. N. Cedaredge	2-12S-95W	10000	Grand Mesa	57.0	39.0	57.1	22.6	16.2	19.8				
55	Snowshoe Mesa	Snowshoe Cr.	"	16mi. NE. Paonia	14-13S-89W	7500	Gunnison	0.0	0.0	0.0	0.0	0.0	0.0				
58	Ironton Park	Red Mtn. Cr.	"	5mi. S. Ouray	29-43N-7W	9800	Uncompahgre	14.5	1.4	19.4	5.7	0.5	8.3				
85	Trickle Divide	Surface Cr.	"	13mi. N. Cedaredge	23-11S-94W	10000	Grand Mesa	--	--	63.9	--	--	23.4				
86	Trickle	"	"	11mi. " "	34-11S-94W	9700	"	--	--	51.9	--	--	18.8				
87	Park Reservoir	"	"	"	34-11S-94W	9500	"	--	--	58.2	--	--	21.3				
89	Porphyry Creek	Porphyry Cr.	"	Monarch Pass	19-49N-6E	10800	Cochetopa	--	--	38.9	--	--	12.5				
						Average for Drainage		17.7	11.3	14.6	7.0	4.4	5.3				
DOLORES RIVER																	
23	Rico	Dolores R.	Colo.	2mi. S. Rico	11-39N-11W	8700	Montezuma	0.0	0.0	0.0	0.0	0.0	0.0				
24	Telluride	San Miguel R.	"	Telluride	6-42N-8W	8600	"	0.0	0.0	0.0	0.0	0.0	0.0				
25	Lizard Head	Dolores R.	"	10mi. N. Rico	24-41N-10W	10300	"	34.1	26.7	32.8	12.8	11.0	12.1				
						Average for Drainage		11.6	8.9	10.9	4.3	3.7	4.0				
SAN JUAN RIVER																	
26	Wolf Creek Pass*	Wolf Creek	Colo.	Wolf Cr. Pass	4-37N-2E	10000	Rio Grande	48.5	40.4	23.2	22.8	18.3	9.8				
29	Upper San Juan	"	"	4mi. W. Wolf Cr. P.	10-37N-1E	10000	San Juan	55.5	44.8	31.8	25.4	20.9	13.1				
30	Silverton Sub.S.	Animas R.	"	2mi. NE. Silverton	10-41N-7W	9400	"	0.0	0.0	0.0	0.0	0.0	0.0				
31	Cascade	Cascade Cr.	"	5mi. N. Electra L.	12-39N-9W	8850	"	0.0	0.0	0.0	0.0	0.0	0.0				
32	Roof Butte	Chin Lee Cr.	Ariz.	8mi. S. Lukochuka	36-41N-10.1W	8500	Navajo Res.	--	--	--	--	--	--				
13	Washington Pass	Tuntsa Wash	N. Mex.	12mi. NE Crystal	26-1N-108.8W	8600	"	--	--	--	--	--	--				
						Average for Drainage		26.0	21.3	15.7	12.0	9.8	5.7				
GREEN RIVER																	
7	East Rim Divide	Fish Creek	Wyo.	13mi. SE. Bondurant	32-37N-111W	7950	Teton	7.0	0.0	0.0	2.6	0.0	0.0				
23	Dutch Joe R.S.	Dutch Joe Cr.	"	12mi. N. Elkhorn	33-31N-104W	8700	Wyoming	14.5	0.0	8.3	5.3	0.0	2.4				
24	Mulligan Park	Surveyor Cr.	"	Fremont Lake	17-35N-108W	8900	"	8.4	3.4	1.9	3.4	1.4	0.8				
25	Kendall R.S.	Green River	"	27mi. NW. Pinedale	23-38N-110W	7900	"	26.0	12.1	18.1	10.8	5.0	7.4				
26	Loomis Park	Beaver Cr.	"	25mi. NW. "	14-37N-111W	8500	"	13.4	4.8	3.4	5.6	2.1	1.0				
27	Snyder Basin R.S.	S. Piney Cr.	"	22mi. W. Big Piney	15-29N-114W	8040	"	29.0	13.1	20.2	11.7	5.0	6.9				
28	Piney-LaBarge	LaBarge Cr.	"	24mi. W. Big Piney	19-29N-114W	8820	"	16.4	5.6	8.6	6.6	2.3	3.1				
						Average for Drainage		16.4	5.6	8.6	6.6	2.3	3.1				

\*On adjacent Drainage      ϕ Comparable average







## COLORADO RIVER WATERSHED

Summary of Federal and State Cooperative Snow Surveys  
Issued May 6, 1940, at Fort Collins, Colo.

Main Drainage and		Local Drainage		State	Location		Elev.	May 1 Snow Course Measurements					
No.	Snow Course				Locality	Description		Av.	1939	1940	Av.	1939	1940
In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
COLORADO RIVER													
(Above Grand Junction)													
7	Park View*	Willow Cr.	Colo.	7mi. SE. Rand	24-5N-78W	9200	Routt	18.0	17.7	20.4	6.9	8.0	5.8
10	Lynx Pass	Rock Cr.	"	7mi. NE. Toponas	27-2N-83W	9100	"	21.5	19.1	23.3	8.7	8.5	8.0
12	Phantom Valley	Colorado R.	"	11mi. N. Grand L.	7-5N-75W	9300	Ry. Mtn. N.P.	14.2	14.5	10.6	5.4	5.5	3.5
16	Berthoud Pass	Fraser R.	"	4mi. S. West Port.	35-2S-75W	9700	Arapaho	39.4	39.6	37.4	14.5	16.3	12.4
19	Tennessee Pass*	Eagle River	"	Tennessee Pass	21-8S-80W	10200	Cochetopa	13.0	22.3	6.7	4.3	7.9	1.3
33	Ind. Pass Tunnel	Lincoln Gulch	"	W. Port. Tunnel	30-11S-82W	10200	Holy Cross	37.5	34.1	33.3	14.1	12.8	11.3
34	N. Lost Trail Cr.	Crystal R.	"	3mi. E. Marble	20-11S-87W	9200	"	21.6	23.2	21.7	8.9	8.8	9.1
37	M. Fork Camp Gr.	Williams Fk.	"	13mi. N. Dillon	16-3 S-77W	9000	Arapaho	10.1	5.1	3.4	3.3	1.8	1.3
44	Fiddler Gulch	Eagle River	"	2mi. E. Mitchell	1-8S-80W	11000	Holy Cross	38.4	39.0	41.4	12.9	14.6	12.7
45	Nast	Frying Pan R.	"	23mi. SE. Basalt	1-9S-83W	8700	"	3.1	1.3	4.7	0.9	0.5	0.4
54	Maroon Lake	Maroon Creek	"	8mi. SW. Aspen	7-11S-85W	9300	"	10.4	2.1	2.0	4.2	1.0	0.6
56	Mesa Lakes	Mesa Creek	"	15mi. E. Palisade	35-11S-96W	10000	Grand Mesa	35.7	19.7	42.8	13.4	7.8	16.6
59	Lulu	Lulu Creek	"	14mi. N. Grand L.	25-6N-76W	10200	Ry. Mtn. N.P.	63.6	60.0	---	26.2	24.3	---
62	Willow Creek P.	Willow Cr.	"	Willow Cr. Pass	1-4N-78W	9500	Arapaho	36.0	33.3	33.3	14.6	15.9	10.6
64	N. Inlet Grand L.	N. Inlet Cr.	"	4mi. NE. Grand L.	26-4N-75W	9000	Ry. Mtn. N.P.	24.3	21.8	17.7	8.8	9.0	5.7
65	Lake Irene	Beaver Creek	"	1mi. SW. Milner P.	8-5N-75W	10600	"	65.8	60.4	61.8	25.2	23.6	20.5
66	Thunderbolt Peak	Buchanan Cr.	"	5mi. E. Monarch L.	22-2N-74W	9500	Arapaho	36.8	26.7	28.5	14.4	11.8	10.0
69	Arrow	S. Ranch Cr.	"	Arrow	34-1S-75W	9900	"	19.9	10.4	15.5	6.0	3.4	1.9
70	Lapland	St. Louis Cr.	"	7mi. SW. Fraser	16-2S-76W	9300	"	14.4	13.3	0.0	4.7	4.7	0.0
79	Fremont Pass#2	Blue River	"	Fremont Pass	2-8S-79W	11400	"	46.7*	55.0	54.2	16.4*	20.0	15.6
				Average for Drainage				28.5	25.9	24.1	10.7	10.3	7.8
YAMPA RIVER													
6	Dry Lake	Soda Creek	Colo.	4mi. NE. Steam. Spgs.	26-7N-84W	8200	Routt	33.9	31.1	37.5	17.2	13.5	19.4
8	Columbine Lodge*	Harrison Cr.	"	Rbt. Ears Pass	21-5N-82W	9300	"	43.9	44.2	40.9	20.0	20.7	18.2
9	Elk River	Independence Cr.	"	Columbine	6-10N-85W	8700	"	30.9	16.9	26.3	12.4	7.1	12.5
10	Lynx Pass*	Morrison Cr.	"	7mi. NE. Toponas	27-2N-83W	9100	"	21.5	19.1	23.3	8.7	8.5	8.0
10	Rambler R.S.	Little Snake R.	Wyo.	13mi. SW. Encampment	25-14N-86W	8600	Medicine Bow	48.6	39.8	44.3	24.1	19.9	24.6
				Average for Drainage				37.8	30.2	34.5	16.5	13.9	16.5
WHITE RIVER													
35	Burro Mountain	N. Elk Creek	Colo.	8mi. S. Buford	15-2S-91W	9000	White River	31.4	24.0	35.0	13.1	10.7	13.2
36	Rio Blanco	White River	"	4mi. NW. Trappers L	28-1N-88W	8500	"	18.9	16.0	16.6	8.2	9.0	7.0
				Average for Drainage				25.2	20.0	25.8	10.6	9.8	10.1

\*On adjacent drainage Readings on original course.



